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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/677,024	09/30/2003	Alan R. Arthur	200311580-1	9379

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INTELLECTUAL PROPERTY ADMINISTRATION
FORT COLLINS, CO 80527-2400

EXAMINER

CHUO, TONY SHENG HSIANG

ART UNIT	PAPER NUMBER
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1795

MAIL DATE	DELIVERY MODE
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10/30/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/677,024	Applicant(s) ARTHUR ET AL.	
	Examiner Tony Chuo	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 September 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12-31 is/are allowed.
- 6) ☒ Claim(s) 1 and 9-11 is/are rejected.
- 7) ☒ Claim(s) 2-8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Claims 1-31 are currently pending. Claims 32-47 have been cancelled. Claims 1 and 9-11 do not overcome the previously stated 102 and 103 rejections. Therefore, claims 1 and 9-11 stand rejected under the following 102 and 103 rejections. Claims 12-31 are allowed. Claims 2-8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Cevasco et al (US 2003/0063826).

The Cevasco reference discloses a method of forming a bearing assembly comprising: an interface "36" between a housing "12" and a bearing set "14" such that slippage occurs at the interface, wherein the housing and bearing set have different

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rates of volumetric expansion because the housing is made of a polymeric material and the bearing set is made of a metal (See Figure 3 and paragraphs [0016],[0019],[0020]).

Examiner's note: It is inherent that slippage occurs at the interface between the housing and the bearing set during volumetric expansion. It is also inherent that the method of forming the bearing assembly comprises a step of forming an interface surface of the interface with respect to a center of growth. Since the bearing set is a symmetrical component that includes interfaces that are partly spherical, the center of growth is a known variable that would be required to form the interface.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1 and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Piascik et al (US 6677069) in view of Higgins (US 5374086).

The Piascik reference discloses a radial solid oxide fuel cell stack "100" comprising components that have different rates of volumetric expansion such as cells "106" that are made of ceramic materials and interconnect layers "108" & "110" that are made of an metal sheets (See Figure 3 and column 7, lines 52-53, column 8, lines 48-58).

However, Piascik does not expressly teach a method of forming an interface comprising a step of forming an interface surface with respect to a center of growth such that slippage occurs at the interface between the components during volumetric expansion. The Higgins reference discloses forming an interface surface on spherical housing "32" such that slippage occurs at the interface between the spherical housing and the semispherical flange "26" during thermal expansion (See column 2, lines 35-42). It is inherent that the center of growth, which is in the center of the spherical component, is necessarily determined in order to form the interface.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Piascik fuel cell to include a method of forming an interface comprising a step of forming an interface surface with respect to a center of growth such that slippage occurs at the interface between the components during volumetric expansion in order to reduce the thermal stress at the interface between components that have different rates of thermal expansion.

Examiner's note: The Higgins reference is relevant to the Piascik reference and the applicant's field of endeavor because it solves the same problem of reducing the thermal stress between two components in a thermally cycled device.

Allowable Subject Matter

6. Claims 12-31 are allowed. Claims 2-8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The Higgins

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reference discloses forming an interface surface on spherical housing "32" such that slippage occurs at the interface between the spherical housing and the semispherical flange "26" during thermal expansion (See column 2, lines 35-42). However, Higgins does not expressly teach a method of forming a thermally cycled component assembly comprising the steps of: determining dimensional characteristics of the first component, defining an axis of volumetric expansion for the first component, projecting a sphere having a center on the axis, and defining the center of the sphere as a center of growth of the first component.

Response to Arguments

7. Applicant's arguments filed 9/12/07 have been fully considered but they are not completely persuasive.

The applicant argues that Cevasco is entirely silent as to anything about how the interface is formed. Although Cevasco et al does not explicitly teach forming an interface surface of the interface with respect to a center of growth, the examiner maintains the assertion that the center of growth is necessarily determined in order to form the interface. As shown in Figure 3 of Cevasco, the bearing set is formed from a component that is part of a sphere wherein the center of growth is the center of the sphere. Since the interfaces are part of a sphere, the center of the sphere would necessarily be used to determine the location of the spherical interfaces "36".

The applicant also argues that Higgins has no relevance to a method of forming an interface or component assembly comprising an interface as claimed. The examiner

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maintains the assertion that the center of growth is necessarily determined in order to form the spherical interface because the center of growth is inherently the center of the spherical component. Therefore, it is inherent that interface taught by Higgins is formed by a step of forming an interface surface of the interface with respect to a center of growth.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tony Chuo whose telephone number is (571) 272-0717. The examiner can normally be reached on M-F, 7:00AM to 3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for

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the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TC


JONATHAN CREPEAU
PRIMARY EXAMINER